

AMENDMENTS TO THE CLAIMS

Claims 1-17 (Canceled).

18. (Currently Amended) A method for assigning bandwidth in a point-to-multipoint ATM transmission system having a centralized or Master Station (MS) and a plurality of Peripheral Stations (PSs), including assigning bandwidth on a transmission channel from at least one of the plurality of Peripheral Stations to the Master Station, assigning time slots using emission of grant messages towards the plurality of Peripheral Stations, the method ~~including~~ comprising:

at the Master Station,

preallocating a certain portion of total bandwidth in a static modality to at least a portion of the plurality of Peripheral Stations, said preallocating representing an assignment of fixed capacity to said at least a portion, on the basis of information about active connections without considering status of queues in the plurality of Peripheral Stations, ~~comprising:~~

receiving instantaneous bandwidth requirement information, by including requests for dynamic bandwidth allocation that are piggy-backed in upstream traffic slots along with user traffic, sent from said portion of peripheral stations (PSs) ~~at the Master Station;~~

distributing bandwidth not assigned with said static

modality to said portion sending said requests in accordance with additional modalities using dynamic bandwidth allocation;

wherein said distributing at the Master Station includes:

distributing bandwidth, in accordance with a first additional modality, using a rate of assignment of transmission that is predetermined and modifiable in accordance with said instantaneous bandwidth requirement information, including: wherein a

assigning minimum guaranteed bandwidth, previously assigned defined during a connection setup phase, is assigned upon request from at least one of said plurality of peripheral stations to portion of peripheral stations sending a request indicating non-empty queues which generates a pending request, and assigning at a rate requested by at least one peripheral station that is limited by a maximum amount and being determined between the master station and the at least one peripheral station during an ATM connection setup phase, wherein the requested rate corresponding to a starting value of a counter being decremented, at each upstream slot time, at the Master Station with the pending request being served upon expiration of the counter; and

assigning bandwidth, in accordance with a second additional modality, which is not assigned by said static modality or first additional modality, that is shared in equal

portions among all peripheral stations requesting from said Master Station a channel to send traffic; and

~~wherein said first additional modality includes evaluating bandwidth allocation in the system by said Master Station on an instantaneous basis based on status of queues in the plurality of peripheral stations received from said plurality to allocate guaranteed bandwidth, defined during a connection setup phase, to at least one requesting peripheral station.~~

19. (Previously Presented) The method of claim 18, wherein said receiving includes receiving the requests containing binary or multi-bit information identifying queue status at the portion of peripheral stations for queues handled by at least one of the additional modalities, and said requests containing information, known to both the master station and the portion of peripheral stations, representing instantaneous rate of grant message generation for guaranteed dynamic bandwidth, said rate being limited by a maximum value dependent on said active connections.

20. (Previously Presented) The method of claim 19, wherein said receiving includes receiving the requests containing said information, wherein said instantaneous rate being estimated on the basis of an incoming rate of ATM cells in the portion of peripheral stations.

21. (Previously Presented) The method of claim 19, wherein said receiving includes receiving the requests containing said information, wherein said instantaneous rate being estimated on the basis of peripheral station queue fillment level.

22. (Previously Presented) The method of claim 18, wherein said grant messages allowing transmission from said at least one peripheral station in a particular time slot on the channel from the peripheral station to the master station, wherein the transmission includes one of a user traffic cell with an associated request, a request only, and an operation and maintenance ATM cell.

23. (Previously Presented) The method of claim 22, wherein said assigning time slots includes assigning time slots using said emission of grant messages, wherein said grant messages address the portion of the peripheral stations where the addressing is independent of type of bandwidth allocation selected by the master station, and the portion of the peripheral stations to select autonomously a queue corresponding to the grant message received, allowing transmission from said portion to the master station, in accordance with predetermined priorities.

24. (Previously Presented) The method of claim 18, wherein said preallocating includes assigning bandwidth with a fixed rate

that is computed on the basis of ATM connection status using a stored table that is cyclically scanned in the master station.

25. (Previously Presented) The method of claim 18, wherein said distributing bandwidth includes distributing bandwidth using a multilevel hierarchy where each level being equal and independent to another level, and each level dedicated to a specific priority level to be used with different classes of traffic.

26. (Canceled).

27. (Previously Presented) The method of claim 18, wherein said distributing bandwidth includes distributing bandwidth where available dynamic bandwidth being assigned cyclically and in equal portions to all peripheral stations previously indicating non-empty queues.

28. (Previously Presented) The method of claim 18, further comprising:

retransmitting traffic from at least a portion of peripheral stations to the master station in response to receiving acknowledgement messages indicating wrongly received cells during a previous transmission and receiving retransmission grant messages at the portion of peripheral stations sending said wrongly received cells.

29. (Previously Presented) The method of claim 28, further comprising:

reinserting cells retransmitted from said portion of peripheral station using a reordering buffer at the Master Station to reinsert retransmitted cells in the correct order; and

storing transmitted cells waiting for subsequent retransmission in retransmission buffers at said portion of peripheral stations.

30. (Currently Amended) A system for assigning bandwidth in a point-to-multipoint ATM transmission system having a centralized or Master Station (MS) and a plurality of Peripheral Stations (PSs), including said system assigning bandwidth on a transmission channel from at least one of the plurality of Peripheral Stations to the Master Station, said system assigning time slots using emission of grant messages towards the plurality of Peripheral Stations, the system including means for preallocating a certain portion of total bandwidth in a static modality to at least a portion of the plurality of Peripheral Stations, said preallocating representing an assignment of fixed capacity to said at least a portion, on the basis of information about active connections without considering status of queues in the plurality of Peripheral Stations, comprising:

a receiver for receiving instantaneous bandwidth requirement

information, by including requests for dynamic bandwidth allocation that are piggy-backed in upstream traffic slots along with user traffic, sent from said portion of peripheral stations (PSs) at the Master Station;

a controller for distributing bandwidth not assigned with said static modality to said portion sending said requests in accordance with additional modalities using dynamic bandwidth allocation;

wherein said controller performs the additional steps of:

distributing bandwidth, in accordance with a first additional modality, using a rate of assignment of transmission that is predetermined and modifiable in accordance with said instantaneous bandwidth requirement information, including: wherein  
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assigning minimum guaranteed bandwidth, previously assigned defined during a connection setup phase, is assigned upon request from at least one of said plurality of peripheral stations to portion of peripheral stations sending a request indicating non-empty queues which generates a pending request, and assigning at a rate requested by at least one peripheral station that is limited by a maximum amount and being determined between the master station and the at least one peripheral station during an ATM connection setup phase, wherein the requested rate corresponding to a starting value of a counter being decremented, at each upstream slot time, at

the Master Station with the pending request being served upon  
expiration of the counter; and

assigning bandwidth, in accordance with a second additional modality, which is not assigned by said static modality or first additional modality, that is shared in equal portions among all peripheral stations requesting from said Master Station a channel to send traffic; and

~~wherein said first additional modality includes:  
evaluating bandwidth allocation in the system by  
said Master Station on an instantaneous basis based on  
status of queues in the plurality of peripheral stations  
received from said plurality to allocate guaranteed  
bandwidth, defined during a connection setup phase, to at  
least one requesting peripheral station.~~

31. (Previously Presented) The system of claim 30, wherein said receiver to receive the requests containing binary or multi-bit information identifying queue status at the portion of peripheral stations for queues handled by at least one of the additional modalities, and said requests containing information, known to both the master station and the portion of peripheral stations, representing instantaneous rate of grant message generation for guaranteed dynamic bandwidth, said rate being limited by a maximum value dependent on said active connections.



32. (Previously Presented) The system of claim 30, wherein said system including:

a counter, including a block of downcounters, for each peripheral station handled by a master station, being preset to a starting value when new connections are activated in the system and being decremented at each time of a slot of the channel from the at least one peripheral station to the master station, and being resent to a starting value after having reached a zero value;

a decoder for activating an output when said counter reaches the zero value;

a memory device for storing queue status sent by said portion of peripheral stations;

a checker device for activating an output when said decoder, associated to a particular peripheral station, is activated and queue status of the particular peripheral station is non-empty, said output generating a transmission grant message to the particular peripheral station when predetermined conditions are satisfied.

33. (Previously Presented) The system of claim 32, wherein said master station to temporarily increment said starting value of the counter of a particular peripheral station in accordance with receiving a request from the particular peripheral station.

34. (Previously Presented) The system of claim 32, wherein said counter, decoder, memory device, and checking device totaling a number corresponding to predetermined traffic priorities in accordance with system traffic load requirements.

35. (Currently Amended) A method for assigning bandwidth in a point-to-multipoint communications system, comprising:

allocating bandwidth at setup to a plurality of receiving stations as assigned by a master station in accordance with a static modality, said allocating representing an assignment of fixed capacity to said plurality;

in response to requests for instantaneous bandwidth allocation, by piggy-backing said requests in upstream traffic slots along with user traffic, received from at least a portion of receiving stations, assigning bandwidth to said portion in accordance with two additional modalities;

in accordance with a first additional modality, dynamically assigning bandwidth to said portion using a minimum guaranteed bandwidth that is predetermined during a connection setup phase including:

assigning said guaranteed bandwidth only to portion of receiving stations sending a request indicating non-empty queues which generates a pending request, and assigning at a rate requested by at least one receiving station that is limited by a maximum amount and being determined between the

master station and the at least one peripheral station during an ATM connection setup phase, wherein the requested rate corresponding to a starting value of a counter being decremented, at each upstream slot time, at the master station with the pending request being served upon expiration of the counter; and

in accordance with a second additional modality, dynamically assigning bandwidth to said portion using bandwidth not assigned using said static modality or said first additional modality, said dynamically assigned bandwidth being shared among the portion of ~~peripheral~~ receiving stations requesting from the master station a channel to send traffic;~~and~~

~~wherein said first additional modality includes evaluating bandwidth allocation in the system on an instantaneous basis based on status of queues in the plurality of receiving stations received from said plurality to allocate guaranteed bandwidth, defined during a connection setup phase, to at least one requesting receiving station.~~

36. (Currently Amended) A system for assigning bandwidth in a point-to-multipoint communications system, comprising:

a controller for performing the steps of:

allocating bandwidth at setup to a plurality of receiving stations as assigned by a master station in accordance with a static modality, said allocating

representing an assignment of fixed capacity to said plurality;

in response to requests for instantaneous bandwidth allocation, by piggy-backing said requests in upstream traffic slots along with user traffic, received from at least a portion of receiving stations, assigning bandwidth to said portion in accordance with two additional modalities;

in accordance with a first additional modality, dynamically assigning bandwidth to said portion using a minimum guaranteed bandwidth that is predetermined during a connection setup phase including:

assigning said guaranteed bandwidth only to portion of receiving stations sending a request indicating non-empty queues which generates a pending request, and assigning at a rate requested by at least one receiving station that is limited by a maximum amount and being determined between the master station and the at least one peripheral station during an ATM connection setup phase, wherein the requested rate corresponding to a starting value of a counter being decremented, at each upstream slot time, at the Master Station with the pending request being served upon expiration of the counter; and

in accordance with a second additional modality, dynamically assigning bandwidth to said portion using

bandwidth not assigned using said static modality or said first additional modality, said dynamically assigned bandwidth being shared among the portion of ~~peripheral~~ receiving stations requesting from the master station a channel to send traffic, ~~and~~

~~wherein said first additional modality includes:~~

~~evaluating bandwidth allocation in the system by said master station on an instantaneous basis based on status of queues in the plurality of receiving stations received from said plurality to allocate guaranteed bandwidth, defined during a connection setup phase, to at least one requesting receiving station.~~